

### AMENDMENTS TO THE CLAIMS

Please amend the claims as follows:

#### Listing of Claims:

Claim 1 (Currently Amended): A method of active queue management, for handling prioritized traffic in a packet transmission system, the method comprising: ~~adapted to~~  
~~provided~~

providing differentiation between traffic originating from rate adaptive applications that respond to packet loss, ~~in which~~ wherein traffic is assigned to one[[,]] of at least two[[,]] drop precedent levels;~~characterised by~~

preventing starvation of low prioritized traffic; ~~while, at the same time,~~  
preserving a strict hierarchy among precedence levels;[[,]] and  
providing absolute differentiation of traffic.

Claim 2 (Currently Amended): A method of active queue management for handling prioritized traffic in a packet transmission system, the method comprising: ~~adapted to~~  
~~provided~~

providing differentiation between traffic originating from rate adaptive applications that respond to packet loss, in which traffic is assigned to one[[,]] of a plurality of drop precedence levels, ~~characterised by~~

using a modified random early detection in and out RIO to calculate RIO drop  
probabilities,

using a load tolerant random early detection in and out ltRIO to calculate ltRIO drop  
probabilities,

~~combined with~~ using a weighted random early detection WRED to calculate WRED  
drop probabilities, so that

creating a plurality of threshold levels[[,]] for an average queue length, ~~are created,~~ by applying ~~different~~ the RIO, ItRIO and WRED drop probabilities to the plurality of drop precedence levels, ~~each precedence level~~ and by

setting all maximum threshold levels to ~~a the~~ same value.

Claim 3 (Currently Amended): The method as A method, as claimed in claim 1, further comprising: characterised by

providing absolute differentiation if a prioritized ~~prioritised~~ traffic is fully controlled and relative differentiation if the prioritized traffic is not fully controlled ~~in other cases~~.

Claim 4 (Currently Amended): The method as A method, as claimed in claim 1, ~~characterised by~~ wherein there are at least two drop precedence levels, in-profile ~~in-profile~~ and out-profile ~~out-of-profile~~, by said method further comprising:

reclassifying a packet, tagged as in-profile ~~in-profile~~, as out-profile ~~out-of-profile~~, when a drop probability assigned to the packet is greater than a drop probability calculated from ~~the~~ an average queue length for in-profile ~~in-profile~~ packets, and by

discarding a packet, tagged as out-profile, ~~out-of-profile~~ when a drop probability assigned to the packet is greater than a drop probability calculated from ~~the~~ an average queue length for out-profile ~~out-of-profile~~ packets.

Claim 5 (Currently Amended): The method as A method, as claimed in claim 4, ~~characterised by~~ wherein:

a maximum threshold value for the average queue length for out-profile ~~out-of-profile~~ packets is[[,]] max\_th\_out, and

a maximum threshold value for the average queue length for in-profile ~~in-profile~~ packets is ~~is~~ max\_th\_in, and ~~by~~ max\_th\_out ~~being~~ is set to a greater value than max\_th\_in.

Claim 6 (Currently Amended): The method as A-method, ~~as claimed in claim 2,~~  
~~characterised by~~ wherein,

a maximum threshold value for the average queue length for in-profile packets is  
max\_th\_in,

a minimum threshold value for the average queue length for in-profile packets is  
min\_th\_in, and

a maximum drop probability for packets marked as in-profile is max\_p\_in,

said method further comprising:

using a set of threshold parameters, including max\_th\_in, min\_th\_in, and max\_p\_in,  
instead of random early detection RED parameters, to determine whether an in-profile ~~in~~  
~~profile~~ packet should be tagged as out-profile ~~out-of-profile~~.

Claim 7 (Currently Amended): The method as A-method, ~~as claimed in claim 6,~~  
~~characterised by~~ said method further comprising:

setting ~~said~~ a plurality of maximum threshold parameters ~~values,~~ max\_th#, including  
max\_th\_in and max\_th\_out, to a ~~the~~ same value.

Claim 8 (Currently Amended): The method as A-method, ~~as claimed in claim 6,~~  
~~characterised by~~ wherein there are three levels of drop precedence, said method further  
including: ~~and by~~

calculating an average queue length for each level of drop precedence based on packets tagged with ~~that~~ a corresponding level and packets tagged with a higher level of drop precedence.

Claim 9 (Currently Amended): The method as A-method, as claimed in claim 8, ~~characterised by~~ further comprising:

assigning a unique threshold to each of the two highest prioritized precedence levels, said unique threshold ~~thresholds~~ being used to determine when a packet is to be tagged with a lower precedence level, and ~~by~~

providing a relative differentiation among said three levels when the average queue lengths for the two highest precedence levels exceeds both thresholds.

Claim 10 (Currently Amended): The method as A-method, as claimed in claim 9, ~~characterised by~~ further comprising:

providing more than three drop precedence levels, and

employing an average queue length parameter for each drop precedence level with associated minimum threshold parameters ~~thresholds~~ min\_th#s and maximum drop probability values max\_p#s.

Claim 11 (Currently Amended): The method as A-method, as claimed in claim 10, ~~characterised by~~ wherein there are eight drop precedence levels.

Claim 12 (Currently Amended): The method as A-method, as claimed in claim 10, ~~characterised by~~ wherein there is a single minimum threshold  $th_{in}$ , for all precedence levels such that no packets are dropped if the average queue length is less than  $th_{in}$ .

Claim 13 (Currently Amended): A method of active queue management for handling prioritized traffic in a packet transmission system, ~~adapted to provided~~ configured to provide differentiation between traffic originating from rate adaptive applications that respond to packet loss, ~~in which~~ wherein traffic is assigned one of at least a first and second drop precedent level, namely in-profile ~~in-profile~~ and out-profile ~~out-of-profile~~, characterised by said method including of:

[-] calculating an average queue length  $avg\_ql$ ;

[-] assigning minimum thresholds  $min\_th\_in$  and  $min\_th\_out$ , for in-profile ~~in-profile~~ packets and out-profile ~~out-of-profile~~ packets respectively, and a maximum threshold  $max\_th$ ;

[-] retaining all packets with their initially assigned drop precedent levels while the  $avg\_ql$  ~~average queue length~~ is less than, or equal to, a threshold  $th\_in$ ;

[-] assigning a drop probability to each packet, determined from the average queue length;

[-] retaining all packets while the  $avg\_ql$  is less than the  $th\_in$ ; and

[-] dropping packets in accordance with their assigned drop probability; ~~and by~~ wherein

$max\_p\_out$  ~~is being~~ greater than  $max\_p\_in$ , ~~where~~  $max\_p\_out$  is being the maximum drop probability of packets marked as out-profile ~~out-of-profile~~ and  $max\_p\_in$  is being the maximum drop probability for packets marked as in-profile ~~in-profile~~.

Claim 14 (Currently Amended): The method as ~~A method, as~~ claimed in claim 13, characterised by further comprising:

applying said method to a FIFO queue.

Claim 15 (Currently Amended): The method as A method, as claimed in claim 13, characterised by further comprising:

[[ - ]] dropping a packet if  $\text{avg\_ql}$ , ~~when the packet arrives~~, is  $> \text{max\_th}$ , when a packet arrives;

[[ - ]] calculating an average queue length for a packet tagged as in-profile  $\text{avg\_ql\_in}$  ~~for a packet tagged as in-profile, calculating  $\text{avg\_ql\_in}$~~ , and, if  $\text{avg\_ql\_in} > \text{th\_in}$  and  $\text{min\_th\_in} < \text{avg\_ql}$ , calculating a probability of dropping a packet tagged as in-profile  $P_{in}$  and dropping[[ , ]] or retaining[[ , ]] said in-profile packet in accordance with ~~the~~ a value of  $P_{in}$ ;

[[ - ]] calculating a probability of dropping a packet tagged as out-profile  $P_{out}$  ~~for a packet marked as out of profile, if  $\text{min\_th\_out} < \text{avg\_ql}$ , calculating  $P_{out}$~~ , and dropping[[ , ]] or retaining[[ , ]] said out-profile packet in accordance with ~~the~~ a value of  $P_{out}$ .

Claim 16 (Currently Amended): The method as A method, as claimed in claim 13, characterised by further comprising:

employing a plurality of drop precedence levels, greater than two, and deriving an average queue length for each drop precedence level.

Claim 17 (Currently Amended): The method as A method, as claimed in claim 15, characterised by further comprising:

setting  $\text{max\_th}$  for each drop precedence level to the same value.

Claim 18 (Currently Amended): The method as A method, as claimed in claim 16, characterised by wherein there are three levels of drop precedence, further comprising: and  
by

calculating an average queue length for each level of drop precedence based on packets tagged with ~~that~~ the corresponding level and packets tagged with a higher level of drop precedence.

Claim 19 (Currently Amended): The method as A method, as claimed in claim 18, ~~characterised by~~ further comprising:

assigning a unique threshold to each of the two highest prioritized precedence levels, said unique thresholds being used to determine when a packet is to be tagged with a lower precedence level, and ~~by~~

providing a relative differentiation among said three levels when the average queue lengths for the two highest precedence levels exceeds both thresholds.

Claim 20 (Currently Amended): The method as A method, as claimed in claim 19, ~~characterised by~~ further comprising:

providing more than three drop precedence levels; and

employing an average queue length parameter for each drop precedence level with associated thresholds min\_th#s and max\_p#s.

Claim 21 (Currently Amended): The method as A method, as claimed in claim 20, ~~characterised by~~ wherein there are eight drop precedence levels.

Claim 22 (Currently Amended): The method as A method, as claimed in claim 20, ~~characterised by~~ wherein there is a single minimum threshold, th\_in, for all precedence levels such that no packets are dropped if the average queue length is less than th\_in.

Claim 23 (Currently Amended): A telecommunications system for transmission of packet data, wherein ~~characterised in that~~ said telecommunications system employs a method of active queue management as claimed in claim 1.

Claim 24 (Currently Amended): A telecommunications system as claimed in claim 23, ~~characterised in that~~ wherein said telecommunications system is an internet.

Claim 25 (Currently Amended): A router for use with a telecommunications system, as claimed in claim 23, ~~characterised in that~~ wherein said router employs the method of active queue management.